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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,816	11/07/2000	Noriaki Sugawara	NEC N00204	6776

7590

03/23/2004

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EXAMINER

SHENG, TOM V

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 03/23/2004

KS

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/707,816

Applicant(s)

SUGAWARA ET AL.

Examiner

Tom V Sheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-9,11-13,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5,7,8,13,15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9,11,12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103 -

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Art in view of Kobayashi et al. (US Patent 6483496 B2).

As to claims 1 and 9, Admitted Art teaches a driving circuit (figure 19) for a color liquid crystal display (LCD 1) comprising:

a first gamma compensating circuit (gamma compensation circuit 4₁) for applying a gamma compensation only to a red video signal (S_{RC}) for an independently applied voltage in said color liquid crystal display and for outputting only a compensated red video signal (S_{RG});

a second gamma compensating circuit (gamma compensation circuit 4₂) for applying a gamma compensation only to a green video signal (S_{GC}) for an independently applied voltage in said color liquid crystal display and for outputting only a compensated green video signal (S_{GG});

a third gamma compensating circuit (gamma compensation circuit 4₃) for applying a gamma compensation only to a blue video signal (S_{BC}) for an independently applied voltage in said color liquid crystal display and for outputting only a compensated

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blue video signal (S_{BG});

a reference voltage generating circuit (reference voltage generating circuit 3) for supplying generated reference voltages (V_L , V_M , V_H) to said first gamma compensating circuit, said second gamma compensating circuit and said third gamma compensating circuit; and

a data electrode driving circuit (data electrode driving circuit 8) for driving corresponding electrodes (data or column electrodes) of said color liquid crystal display based on said compensated red video signal, said compensated green video signal and said compensated blue video signal.

Admitted Art does not teach gamma compensations **suitable only for red transmittance characteristics** in the first gamma compensating circuit, **suitable only for green transmittance characteristics** in the second gamma compensating circuit, and **suitable only for blue transmittance characteristics** in the third gamma compensating circuit. Moreover, Admitted Art does not teach a reference voltage generating circuit **supplying respectively independently generated reference voltages** to the first, second and third gamma compensating circuits.

Kobayashi teaches a reference voltage control circuit 100 (see figures 3 and 8). For each color, there is an adder 121(r,g,b) for adding a common brightness data BD and a sub-brightness data SBR, SBG or SBB that is specific to the characteristics of each of the RGB lines. Further, there is a selector 111(r,g,b) for selecting either an image data (DR, DG, DB) during the effective display period or a reference voltage data (CDR, CDG, and CDB) during the blanking period. See column 6, lines 10-33.

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Furthermore, the image data and reference voltage data are D/A converted afterwards by the D/A converter 2 and then sent to RGB driver 3 for driving LCD 4.

Kobayashi further teaches that by using different reference voltage data (CDR, CDG, CDB) and corresponding reference voltages, an optimum driving voltage can be applied for every RGB color to the LCD 4 in order to perform high quality display with high color reproducibility. See column 6, lines 39-61.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Admitted Art's reference voltage generating circuit in view of Kobayashi such that independently generated reference voltages would be supplied to respective gamma compensating circuits due to the different transmittance characteristics of each color, because the display would be adjusted to the optimum brightness level of each color at each video signal input and resulting in high quality display with high color reproducibility.

As for claims 3, 4, 11 and 12, both Admitted Art and Kobayashi teach using independent reference voltages for the color signals, and further Admitted Art teaches how transmittance vary for each of the three primary colors (figures 22 and 24) from a minimum transmittance to a maximum transmittance that would allow one of ordinary skill in the art to utilize. Further, since the transmittance characteristics are independent, the reference voltage or data are naturally independently changeable.

Allowable Subject Matter

3. Claims 5, 7, 8, 13, 15 and 16 are allowed.

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4. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts of record teaches as for claim 5, the recitation "said gamma compensation including a first gamma compensation of voluntarily giving a luminance of a reproduced image to an input image luminescence and a second gamma compensation of said signals conforming to a red transmittance characteristics, a green transmittance characteristics and a blue transmittance characteristics of a red video signal, a green video signal and a blue video signal, respectively" and other limitations of the claim, and as for claim 13, the recitations "a first gamma compensating circuit for applying gamma compensation only to a red video signal, said gamma compensation including a first gamma compensation ... and a second gamma compensation ...", "a second gamma compensating circuit for applying gamma compensation only to a green video signal, said gamma compensation including a first gamma compensation ... and a second gamma compensation ...", and "a third gamma compensating circuit for applying gamma compensation only to a blue video signal, said gamma compensation including a first gamma compensation ... and a second gamma compensation ..." and other limitations of the claim. Claims 7 and 8 are dependent on claim 5. Claims 15 and 16 are dependent on claim 13.

Response to Arguments

5. Applicant's arguments filed on 1/23/2004 have been fully considered but they are not persuasive.

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Applicant argues that Kobayashi does not teach individual color gamma compensation because reference voltage data (CDR, CDG, CDB) are controlled so that each color can be adjusted to an optimum brightness level, instead of optimum gamma compensation suitable to the characteristics of a color liquid crystal display.

The examiner is using the Kobayashi reference because he teaches independent reference voltage data to separately adjust the optimum brightness level of each color. The motivation is to combine Kobayashi's independent reference voltage idea with Admitted Art's already individual gamma compensation circuits (41, 42, and 43) in order to achieve optimum gamma compensation for each of the colors (R, G, B). With optimum gamma compensation comes optimum transmittance/luminance and correspondingly optimum brightness. Note Admitted Art already teaches the benefits of individual gamma compensations (figures 22-24).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V Sheng whose telephone number is (703) 305-6708. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Sheng
March 19, 2004


Amare Mengistu
Primary Examiner